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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,133	07/02/2003	Mervyn John Miles	SHP-PT077	3323
3624	7590	08/18/2005	EXAMINER LUU, THANH X	
VOLPE AND KOENIG, P.C. UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			ART UNIT 2878	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/612,133

Applicant(s)

MILES ET AL.

Examiner

Thanh X. Luu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/2003:05/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of claims 1-21 and 23 in the reply filed on July 7, 2005 is acknowledged.

Claim 22 has been withdrawn.

***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the scan lines, the circular arrangement of scan lines, the rectangular scan area, monitoring a change distribution in a semiconductor device must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 21 and 23, it is unclear what the phrase "each scan line being collected" means. That is, it is unclear how oscillating acts to "collect" scan lines. Furthermore, it is unclear what "their arrangement" refers to.

Regarding claim 20, it is unclear how the microscope is adapted to monitor charge distribution in a semiconductor device, as no additional structural limitation is presented.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Kley (U.S. Patent 6,752,008).

Regarding claim 23, Kley discloses (see Figs. 1 and 3) a scanning probe microscope and method for scanning a sample by means of interaction between the sample and the probe, comprising: driving means (22) arranged to provide relative motion between the probe and the sample surface and capable of bringing the same and probe into close proximity; means for oscillating (18) either the probe or the sample in order to provide relative oscillatory motion (see Fig. 3) of the probe across the surface; and at least one of a probe detection mechanism (24) arranged to measure at least one parameter indicative of strength of the interaction between the probe and the sample for imaging the sample; the microscope is arranged, in operation, to carry out a scan of the sample surface wherein scan area is covered by an arrangement of scan lines (see Fig. 3), each scan line caused by oscillating either the probe or the sample near resonant frequency. The oscillation amplitude inherently (see Fig. 3) determines a maximum scan line length.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4 and 6-21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kley in view of Elings et al. (U.S. Patent 6,008,489).

Regarding claim 21, Kley discloses the claimed invention as set forth above. Kley does not specifically disclose adjusting the probe separation distance to drive a value of the monitored parameter back towards a set value. Elings et al. teach (see Figs.) a feedback system in which the probe distance is moved to drive a value back towards a set value (setpoint value). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a feedback system in the apparatus and method of Kley in view of Elings et al. to provide more accurate detection.

Regarding claims 1, 3, 7-12, 14 and 20, Kley in view of Elings et al. disclose the claimed invention as set forth above. Kley also discloses (see Figs.) an AFM cantilever and actuator as claimed. Kley does not specifically disclose responding to a variation in an average value. Elings et al. further teach (see claim 48) averaging values. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide average values in the apparatus and method of Kley in view of Elings et al. to provide more accurate detection. Further as understood, the device of Kley in view of Elings et al. is capable of monitoring charge distribution in a semiconductor device as claimed.

Regarding claims 2, 4 and 17-19, Kley in view of Elings et al. disclose the claimed invention as set forth above. Kley does not specifically disclose measuring

capacitance. Elings et al. further teach (see col. 1, line 26) that it is conventional to measure deflection by measuring capacitance. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to measure capacitance in the apparatus and method of Kley in view of Elings et al. as desired for deflection detection.

Regarding claim 6, Kley in view of Elings et al. disclose the claimed invention as set forth above. Kley does not specifically disclose measuring a magnetic field. Elings et al. further teach (see col. 2, lines 35-40) that it is conventional to use such probes to measure magnetic fields. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to measure magnetic fields in the apparatus and method of Kley in view of Elings et al. to provide further functionality as desired.

Regarding claims 13, 15, 18 and 19, Kley in view of Elings et al. disclose the claimed invention as set forth above. Kley and Elings et al. do not specifically disclose a tuning fork as claimed. However, choosing a particular type of oscillator is a matter of design choice. Furthermore, tuning forks are notoriously well known in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to choose a tuning fork as claimed in the apparatus and method of Kley in view of Elings et al. to provide more stability as well known.

Regarding claim 16, Kley in view of Elings et al. disclose the claimed invention as set forth above. Kley and Elings et al. do not specifically disclose a time constant as claimed. However, choosing a particular time constant is a matter of design choice. It

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would have been obvious to a person of ordinary skill in the art at the time the invention was made to choose time constant values as claimed in the apparatus and method of Kley in view of Elings et al. to sufficiently react to changing conditions and obtain improved detection.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kley in view of Elings et al., and further in view of Ookubo (U.S. Patent 6,614,227).

Regarding claim 5, Kley in view of Elings et al. disclose the claimed invention as set forth above. Kley and Elings et al. do not specifically disclose the specific capacitance probe detection mechanism as claimed. Ookuba teaches (see Fig. 9) a capacitance probe detection mechanism having a resonator (101) and voltage modulator (201, 202) as claimed. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a configuration as claimed in the apparatus and method of Kley in view of Elings et al. to effectively implement capacitance detection as desired for deflection detection.

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).



Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claim 23, 1 and 21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1, 26 and 38, respectively, of copending Application No. 10/635203. Although the conflicting claims are not identical, they are not patentably distinct from each other because, for instance, claim 23 is simply a rewording claim 1 of the '203 patent.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is 571-272-2441. The examiner can normally be reached on M-F 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke extending to the right.

Thanh X Luu  
Primary Examiner  
Art Unit 2878

08/2005

